SECTION 7 GUIDELINES - Snake River Basin Office
Northern Idaho Ground Squirrel (threatened species)
(Spermophilus brunneus brunneus)

I. BACKGROUND

Legal Status

The northern Idaho ground squirrel *(Spermophilus brunneus brunneus*)(NIDGS) is a threatened species under the Endangered Species Act of 1973, as amended (61 FR 7596). The Final Rule for this listing is dated April 5, 2002.

Species Description

Originally considered to be one species, the Idaho ground squirrel is currently comprised of two subspecies - the northern (*S.b. brunneus*) and southern (*S.b. endemicus*) (Yensen 1991). The northern Idaho ground squirrel is a small terrestrial, burrowing mammal, approximately 152 millimeters (mm) - 230 mm (6 - 10 inches [in]) in length, and has a short, narrow tail, and large tan-colored ears and feet. Pelage in northern Idaho ground squirrel differs from the southern Idaho ground squirrel in its mid-dorsal area which consists of long, dark guard hairs and shorter, dark guard hairs with one paler-colored band on the shield (Yensen 1991).

Additionally, the baculum (penis bone) of northern Idaho ground squirrel is generally smaller than that of the southern Idaho ground squirrel. A principal-component analysis indicated a significant difference among bacula of the two subspecies that forms a cluster well separated in character space (Yensen 1991). Genetic differentiation between the two subspecies has also been confirmed using enzyme restriction analysis, blood allozyme analyses and DNA protein sequencing (Gill and Yensen 1992; Sherman and Yensen 1994).

Species Distribution/Abundance

The historical distribution of NIDGS included parts of west-central Idaho in Adams and Valley Counties (Figure 1 - IGS). Currently, the species has been documented to occur on a tableland between Cuddy and Seven Devils Mountains, in the valleys to the east (Lost Valley Reservoir and Price Valley), and in Long Valley further east and south (Yensen 1991, USDA ____). The main concentration of NIDGS occurs in a large meadow complex near Bear (Adams Co.) measuring 10 by 30 kilometers (km) (6.21 by 18.63 miles [mi]), but the squirrels occupy <500 hectares (< 1,235.5 acres) total area (Figure 1 - IGS). Currently the species is assumed to be extirpated in the Cascade Lake area in Round Valley.

Populations range from less than 50 animals at 4 sites to more than 200 animals at one site, and occurrences can be separated from each other by more than several kilometers. Biologists estimate that a total of less than 500 squirrels exist today.

Life History

Northern Idaho ground squirrels emerge in late March or early April and cease above ground activity in late July or early August (Yensen 1991). Adult (2 years old) males emerge first, followed by adult females, then yearlings. Entrance into seasonal torpor is in about the same order, with pups active approximately 1 month later than adult males. Ground squirrels are diurnally active (Sherman 1989). Newly emerged females remain near their hibernacula, where they are located and courted by adult males. Females are sexually attractive to males for only a few hours on the first or second afternoon following their emergence. Diet consists of forbs, grasses, seeds and various green vegetation (Yensen 1991).

Habitat

The habitat of the northern Idaho ground squirrel is drier meadows surrounded by Ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) forests between 1,150 and 1,550 meters (m) (3,773.15 and 5,085.55 feet [ft]) elevation. The xeric meadows typically have a shallow (<1 m [<3.281 ft] to bedrock), reddish-brown to yellowish-red skeletal-loam or clay-loam soil (Yensen 1991). These drier portions of meadows are occupied by Idaho ground squirrels only in the absence of Columbia ground squirrels (*Spermophilus columbianus*). Vegetation in these drier meadows often is dominated by *Artemisia rigida* (stiff sage) or *A. tridentata vaseyana* (mountain big sage), with *Lomatium sp*., *Sedum stenopetalum*, *Allium sp*., *Gilia aggregata*, *Brodiaea douglasii*, various bunchgrasses and other forbs.

Threats

A number of factors have been attributed the decline of the species. They include:

- agricultural land conversion;
- meadow invasion by conifers;
- golf course development;
- off-road and on-road vehicle use;
- road construction;
- overgrazing by sheep and cattle; and,
- dispersed and developed campground expansion.

In a recent evaluation of the extant sites, Forest Service ecologists have hypothesized that because of past livestock grazing activities, the forb component in many of the sites that currently have or previously supported populations of ground squirrels, have a significant reduction of forbs within the meadows complexes.

As indicated above, a serious threat to the NIDGS may be attributed to forest structure and meadow invasion by conifers (USDA 1994). Fire suppression activities and the dense regrowth of conifers after logging activities have significantly reduced the available habitat. As the meadow/forest complex was reduced, the amount of dispersal habitat was also reduced, further

constricting the northern Idaho ground squirrel into smaller areas. This lack of dispersal corridors may have caused isolated populations to become extinct as habitat continued to be reduced.

One site known to have northern Idaho ground squirrels recently was converted to a golf course. Associated with this was a program to eradicate ground squirrels, which resulted in the loss of the NIDGS population at that site (Eric Yensen, Albertson's College of Idaho, pers. comm., 1993, USDA 1994). Recreational activities such as off-road vehicle use and dispersed camping have also been noted at some sites. The effect of these activities could be further fragmentation of small populations and the destruction of burrow systems. Several sites with spotty or limited occupation by northern Idaho ground squirrels are in or near recreational sites such as dispersed and developed campgrounds.

While scientific collection of ground squirrels may not effect the continued existence of the species as a whole, it could adversely impact the social structure of colonies (USDA 1994). Additionally, recreational shooting of the subspecies may have contributed to the decline of the population (Yensen 1991). Little data are available to ascertain the effects of these two activities to the overall status of the subspecies.

The main predators of these ground squirrels include badgers and prairie falcons. Mortality from predation by badgers can occur during hibernation (Yensen 1993).

In 1996, a Conservation Agreement between the U.S. Fish and Wildlife Service and the Forest Service was signed and implemented. Various aspects of this agreement continue to be implemented in the hopes of expanding the availability of habitat, thereby helping increase the population of NIDGS. Currently, the largest known population of NIDGS still occurs on private land, and the Nature Conservancy continues to work with the landowner(s) in managing the species. However, the management agreement with The Nature Conservancy will expire if the owners decide sell the property.

Researchers believe that the northern Idaho ground squirrel has been forced into shallower soils because of the presence of another species, the Columbian ground squirrel (*S. columbianus*) (Yensen 1993). Columbian ground squirrels are larger and may be competing for the deeper soils that provide better over-winter protection and better forage vegetation. In areas where both species occur, the northern Idaho ground squirrel tends to occupy the shallower soil areas. Columbian ground squirrels need the deeper soils due to larger body size. Over-winter mortality appears to be a contributing variable in the decline of the northern Idaho ground squirrel, particularly when snow levels are low. The soils tend to freeze to lower depths when snow levels are inadequate. When snow levels are high, the squirrels are insulated from freezing or running out of stored energy during torpor. Researchers have found that population crashes do occur at some sites when snow levels are below normal (USDA 1994). Due to the small sizes of individual populations and the small total number of individuals, the Northern Idaho ground squirrel may have little resilience to such stochastic events.

Landownership

The Northern Idaho ground squirrel occurs on private property and Payette National Forest lands. About one-third of the populations occur on federal lands and about 50 percent of the total number of individuals occur on the property of one private landowner (Yensen 1993).

References

U.S. Department of Agriculture (USDA), Forest Service, Idaho Department of Fish and Game, and U.S. Fish and Wildlife Service. 1994. Habitat Conservation Assessment and Conservation Strategy, *Spermophilus brunneus brunneus* - Idaho ground squirrel. Unpublished document. 14 pp.

Yensen, E. 1991. Taxonomy and Distribution of the Idaho ground squirrel, *Spermophilus brunneus*. J. Mamm., 72(3): 583-600.

Sherman, P. W. 1989. Mate guarding as paternity insurance in Idaho ground squirrels. Nature 338:6214, pp 418-420.

U. S. Fish and Wildlife Service. 1996. Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species. Federal Register Volume 61 No. 40 pp 7596-7605.

Contacts

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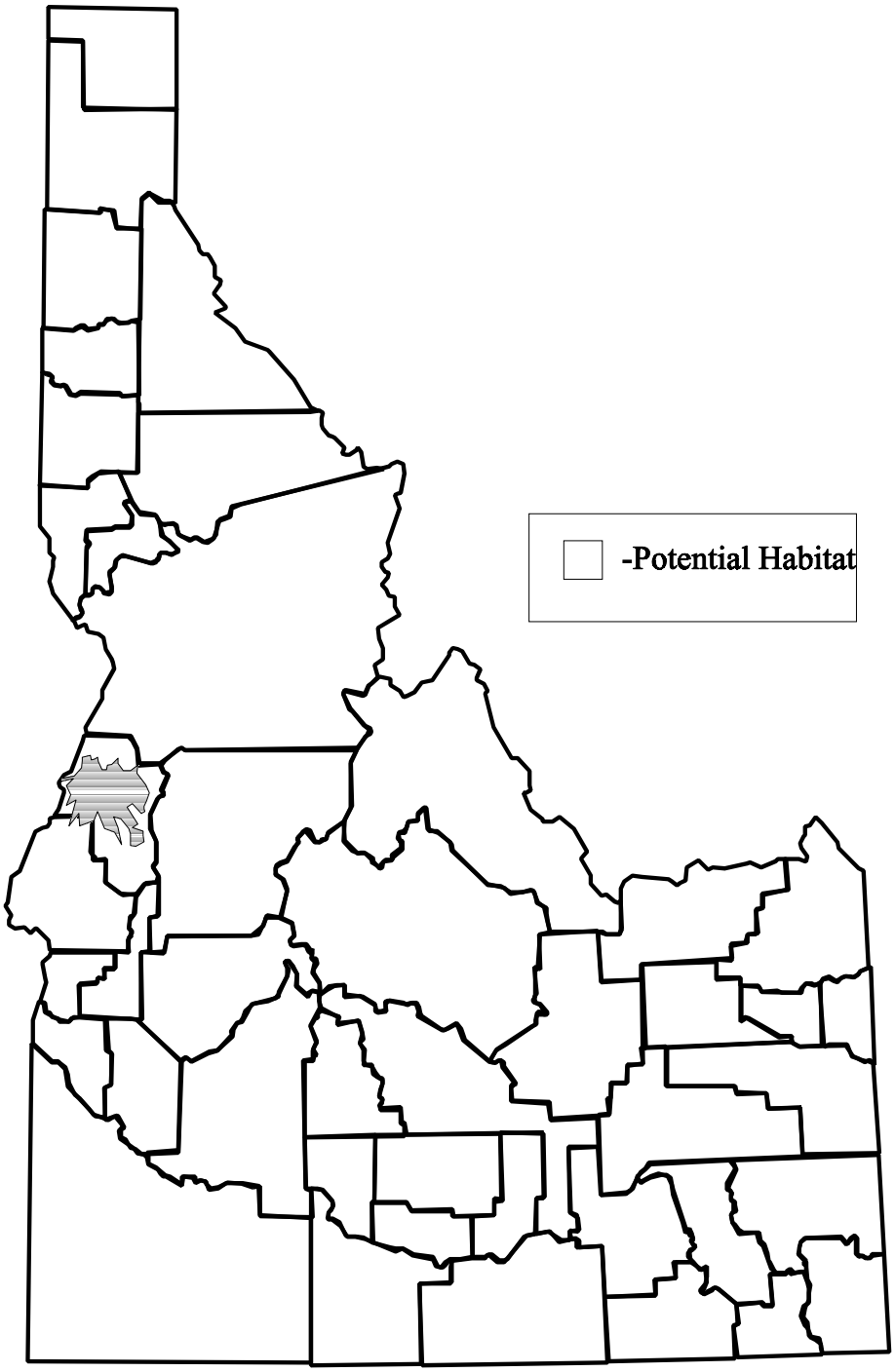

Figure 1- NIGS. Potential habitat for the Northern Idaho ground squirrel (*Spermophilus brunneus brunneus*) in Idaho. (From Groves, C. 1997. Annotated atlas of Idaho's terrestrial vertebrates. Idaho Department of Fish and Game.)

II. GUIDELINES - Protocol for Evaluating Project Effects

A Biological Assessment (BA) should be prepared if a proposed action occurs within the known and historical range of the species. Currently, this range includes extant populations on the Council and New Meadows Ranger District's of the Payette National Forest, and historical/potential habitat areas on the Cascade and Emmett Ranger District's of the Boise National Forest. This geographic extent also includes private and state lands.

Recovery Objectives and Criteria

The short-term objective of the draft Recovery Plan is to protect known populations of this listed species by eliminating or reducing threats. The long-term objective is to restore viable, self-reproducing populations of the species within the historical range to the point the species is delisted.

NIDGS Survey and Inventory Guidelines

In order to determine the presence and/or extent of NIDGS on a project site, refer to the attached Guidelines in conducting surveys or inventories.

Issues to address in BAs for NIDGS

In Known or Extant Sites (i.e., Payette National Forest)

C Management actions within NIDGS occupied and potential habitat should be designed and implemented in a manner that maintains current levels of, or provides opportunities for the expansion and genetic integrity of, the NIDGS.

C For proposed actions that may affect the potential habitat for NIDGS, identify potential habitat and determine species presence within or near the project area.

C During project planning for management actions located within NIDGS occupied and potential habitat, opportunities that will benefit NIDGS habitat, and that are applicable to the project's purpose and need, shall be incorporated into the design of the project to pro-actively contribute to the survival and recovery of NIDGS.

- Management actions within known occupied NIDGS habitat that may disrupt the reproductive success of the species during the breeding period should be avoided. During project planning, determine sites, periods, and appropriate avoidance and minimization measures.

- Management actions within occupied or potential NIDGS habitat that include application of insecticides, herbicides, fungicides, or rodenticides, should be designed and implemented in a manner that does not adversely affect the survival and recovery NIDGS.

Fire Management

- Heavy equipment shall not be used to construct firelines within occupied NIDGS habitat unless it is determined that imminent safety to human life or protection of structures is an issue.

- Incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities should be located outside of occupied NIDGS habitat.

- Avoid delivery of chemical retardant, foam, additives, or gray water to all surfaces within occupied NIDGS habitat unless imminent safety to human life or protection of structures is an issue, or the wildlife would cause more long-term damage to the species habitat.

Lands and Special Uses

C Land acquisition, exchange, and conservation easements should be used, where appropriate, in the furtherance of NIDGS conservation.

- Lands containing potential or occupied NIDGS habitat should not be conveyed unless conditions are included to benefit the species.

Recreation Resources

- Impacts to occupied or potential NIDGS habitat resulting from existing developed or dispersed recreation sites should be evaulated in order to identify and prioritize any management actions that may be needed to avoid or minimize impacts.

<u>For Developed Recreation</u>:

C Where evaluations of NIDGS populations or their habitats demonstrate that impacts from existing developed recreational facilities are likely to adversely effect the survival and recovery of the species, on-site avoidance or minimization measures shall be implemented. Where on-site measures are not successful, the existing facilities should be relocated. If suitable alternative locations are not available, the sites should be removed.

C All new developed recreational facilities should be located outside occupied or potential NIDGS habitat.

<u>For Dispersed Recreation</u>:

C Evaluations of NIDGS populations or their occupied/potential habitat should be

conducted where the impacts from existing dispersed recreational uses are likely to adversely affect the survival ad recovery of the species.

Rangeland Resources

C Livestock trailing, driving, bedding, watering, and other handling efforts should avoid or minimize adverse effects to NIDGS and its habitat.

- New water developments, corrals, and other handling or loading facilities should not be located within occupied NIDGS habitat unless it can be demonstrated that these facilities do not adversely affect the survival and recovery of the species or its habitat.

- Livestock salting and/or bed grounds should be located outside occupied NIDGS habitat so that the species shall not be adversely affected by the livestock.

- Avoid or minimize adverse effects to occupied NIDGS habitat through grazing system design and implementation, and livestock handling adjustments.

Mineral Resources

C Do not allow new development of saleable or leasable mineral operations within occupied NIDGS habitat.

- Avoid adverse impacts from locatable mineral operations to NIDGS and its habitat.

Roads and Facilities

C Motorized vehicles or off-road use within current occupied habitat shall be avoided or seasonally restricted.

C To protect NIDGS and their occupied and potential habitat, water supply points, service areas, and other needs for road and facility construction shall be specified in project planning and used in project implementation.

- Transportation system design within potential or occupied NIDGS habitat should provide for the species conservation in new road designs.

In Historical/Potential Habitat (i.e., Boise National Forest)

- Conduct presence and/or habitat quality surveys for NIDGS within the historic range/ habitat of the species during project planning for vegetation management or other ground

disturbing actions, to update the species' presence and to identify management opportunities to improve habitat quality that may be important to future expansion and recovery of NIDGS.

- When NIDGS presence or habitat quality surveys are conducted within historic NIDGS habitat, accepted survey protocols should be used during time periods that are appropriate for obtaining meaningful results.

Attachment

NORTHERN IDAHO GROUND SQUIRREL SURVEY AND INVENTORY GUIDELINES

U.S. Fish and Wildlife Service

Snake River Basin Office

These guidelines describe protocols for conducting inventories for the Federally listed threatened northern Idaho ground squirrel (NIDGS), and describes the minimum standards for reporting results. The Service will use the information outlined below:

1) to assist in determining whether proposed project(s) may affect the species, and

2) to evaluate the direct, indirect, and cumulative effects associated with the project(s) under consideration.

Field surveys/inventories should be conducted in a manner that will locate the species. Field inventories should be conducted by qualified biologist(s) familiar with NIDGS. The field investigator(s) should:

1. Surveys should be conducted by walking or otherwise closely scrutinizing potential NIDGS habitat looking for diagnostic sign such as burrows, tracks, scat, feeding residues, and/or other sign. It should be performed by a trained biologist familiar with conducting small mammal surveys and inventories, and familiar with the life history and ecology of NIDGS.

2. Surveys should be conducted at the time of year when the species is active and there is the greatest opportunity for positive visual confirmation

1. Known populations range in size from 1 to 50 squirrels. Because of their low densities, squirrels may not be seen during a "quick" one-time only survey. Therefore, several visits may be necessary.

2. In some instances, a survey may incorporate a live-trapping component because the species may be present in very low densities over a large area.

    a. Once captured, the investigator will clip a sampling of hair from the dorsal portion of the rump and save as a voucher for future verification

    b. It is important to identify the trap type, trap placement, and minimum number of hours between trap checks to ensure no injuries or mortalities.

5. Surveys conducted in <u>potential habitat</u> before the species emergence in spring and after all aboveground activities have ceased in late summer and into fall, may not be considered sufficient by the FWS. The exception, however, would be where the individual conducting the survey has a demonstrated proficiency in identifying NIDGS sign (e.g., burrows, tracks, scats, etc.)

6. Vegetation, soil, and/or ortho-topo maps should be reviewed prior to initiating any field surveys to provide the investigator a clearer picture as to where to survey for the species. However, simply reviewing these maps should not be construed as a means to disqualify and area as "not potential habitat" without field surveys to help substantiate this call.

7. A report that contains the results of field survey should be submitted to the Snake River Basin Office (SRBO). This report should include at a minimum:

    a. a description of the biological setting, including plant community (forb to grass ratio?), topography, soils, potential habitat and cover, and an evaluation of other environmental conditions, such as slope and aspect

    b. a map of the project location with a legal description of the site (showing scale, orientation, project boundaries, parcel size, and quadrangle name)

    c. survey dates and survey methodology(ies) used

    d. maps showing the specific route(s) traveled or live-trap placement within the survey area

    e. a comprehensive list of all small mammal species observed, detected, and occurring on the project site for each habitat type

    f. current and historic land uses of the habitat(s) and degree of site alteration

    g. presence of NIDGS off-site on adjacent parcels, if known

    h. an assessment of the biological significance or ecological quality of the project site in a local and regional context

    j. names and qualifications of all surveyors

8. If target species is(are) found, the following information should also be included in the report:

    a. a map showing the Federally listed species distribution as it relates to the proposed project.

    b. an estimate of the number of individuals of NIDGS per unit area; identify areas of high, medium and low density of target species over the project site (if possible), and provide acres of occupied habitat of NIDGS. Investigators could provide color slides or photos of NIDGS or representative habitats to support information or descriptions contained in reports.

c. the degree of impact(s), if any, of the proposed project as it relates to the occupied (or potential unoccupied) habitat of NIDGS.

9. Document findings of the species by submitting copies of field notes to the FWS and/or Forest Service, as appropriate. Documentation of determinations and/or voucher specimens (i.e., hair samples)[1] may be useful in cases of taxonomic ambiguities, habitat or range extensions.

10. Report as an addendum to the original survey, any change in abundance and distribution of the NIDGS in subsequent years. Project sites with inventories older than 1 year from the current date, or conducted outside the time period of the species aboveground activities, will likely need additional surveys. Investigators should consult with the Service to assess whether additional surveys are needed.

11. Adverse or unforeseen conditions may prevent investigator(s) from determining the presence of and/or identifying NIDGS. Disease, fires, or predation, may influence the presence or identification of NIDGS in any year. In some cases, additional surveys in subsequent years may be required. Investigator(s) should discuss such conditions, if applicable, for NIDGS and/or project sites.

12. Consult the SRBO's Section 7 guidelines for additional species-specific information on threats, potential habitat, etc.

[1]Live-trapping NIDGS and voucher specimens of Federally listed species should NOT be conducted UNLESS the surveyor possesses a valid scientific collecting permit issued by the Service